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(54) **Text broadcast receiver**

Text-Rundfunkempfänger

Récepteur de radiodiffusion pour un signal de texte

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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a text broadcasting receiver which uses television program table data provided by the text broadcaster to simplify the VCR timer recording reservation operation.

2. Description of the Prior Art

Text broadcasts which use conventional television frequencies to provide static image data comprising text and graphics have become commercially available in recent years, and television receivers with a built-in text broadcast reception function have been developed and marketed.

EP-A-0 368 313, defining the closest prior art from which the invention proceeds, discloses a video tape recorder having video recording reserving function and capable of receiving teletext broadcasting which video tape recorder selects a program list data out of the teletext data and stores the same in a picture data memory. The program list data includes character data related to the date, time and the like of programs to be broadcasted. A group classifying circuit determines types of characters constituting these character data one by one and collects continuous characters of the same type as one group, so as to classify the character data into various character groups. A decoding circuit decodes time or date information based on the character group indicative of numerals of the character group indicative of months. The information decoded in this manner is taken in a reservation data memory, and the reserved video recording is carried out based on the data.

WO-A-90/15507 (= EP-A-0 474 677) discloses a video recorder comprising a video appliance controller for television program selection. A signal representative of a television program guide and a signal indicating which program is currently being received are received at the point of reception of a television program signal. The program guide signal is used to cause a program guide to be displayed on a television screen. A viewer selects one or more programs to be recorded or viewed from the displayed guide. While the received program indicating signal indicates that the program currently being received is one of the selected programs, recording or viewing of the program is enabled. A further extension of this known device causes the name of a television program to be recorded on a video recording along with the program so that on replay the recording can readily be identified.

DE-A-33 35 082 describes a method for programming a receiver and in particular a video recorder for receiving and/or recording certain programs. The programming is caused by a marker on the screen of a television receiver controlable by the user, wherein the marker is displayed automatically due to additional control bits from a transmitter or by a controlling element if video text charts with program information are being sent.

JP-A-58191585 discloses a character broadcast receiver for attaining a program reservation by displaying a program index list and a program reservation list on the same screen immediately when a specific operation mode is selected. The character broadcast receiver consists of a color television receiver section and a character broadcast decoding section. The character broadcast decoding section is provided with a character broadcast signal extracting section and data extraction sections. A program index list memory which stores the specific reserved programs stored in reservation memories is connected to one of the data extraction sections. The character broadcast decoding section is provided with a program reservation list memory which stores the reserved program selected in the program information with the control of a keyboard control section. When the specific operating mode is designated from the keyboard control section, the progam index list and the program reservation list from a character figure signal generating section inputting the output of the program reservation list memory are displayed on the same screen based on the output from the program index list memory, allowing to simplify the operation of the program reservation surely.

A further conventional text broadcast receiver is described herein below with reference to the accompanying figures. Figure 2 illustrates a diagram of the text broadcast data transmission procedure, to describe the data transmission sequence in text broadcasting.

Text broadcast data is transmitted in four vertical blanking periods. 14H (277H) through 16H (279H) and 21H (284H), of the conventional television signal. In each 1H of the four blanking periods, the following text broadcast data are multiplexed: the synchronization data; prefix (PFX); data block; and check code. The check code is used for error correction and data block extraction, and the data block which carries the informative data is combined with the data block obtained from other 1H line to form a data group. Each data group comprises the data group header, data header, and data unit. The data group header includes a data group identification code which indicates whether the data following the header is program management data, page data, or program index data. The data header shows the program number of the following data unit, and contains a data header parameter which indicates whether the data unit is program management data, page data, continued data, or program index data. The data unit is the collection of data which is actually processed, and is classified by the data unit parameter indicating the data type (e.g., text, melody, photographic).

The construction of a conventional text broadcast receiver is described next

Fig. 4 is a block diagram of a conventional text broadcast receiver comprising: a data extraction section 20 to extract the text broadcast signal multiplexed to vertical blanking periods of the video signal, apply error correction, and extract the data block; a data group construction section 21 to construct the data groups from the data blocks extracted by the data extraction section 20; a data identifier section 22 to identify whether a data group constructed by the data group construction section 21 is program index data or page data, in accordance with the information obtained from a data group identification code, data header parameter, data unit parameter, and program number data; a program index processing section 23 to process program index data to manage the program numbers of the text broadcast programs transmitted on that channel; a decoding section 24 which processes the page header and interprets the text, melody, and photographic data according to the type thereof as identified by the data unit parameter; and a display controller 25 which converts the data interpreted by the decoding section 24 to display data (RGB data) for viewing through the display device.

The operation of a conventional text broadcast receiver as thus described is described below. The first step is extraction of the text broadcast signal multiplexed to the vertical blanking period of the input video signal by the data extraction section 20, followed by error correction and data block extraction. Data groups are then constructed from the extracted data blocks by the data group construction section 21. The data identifier section 22 then determines, using the data group identification code in the data group header and the data header parameter and program number information in the data header, whether the data group is program index data or page data. If the data group is program index data, program number data management processing is applied for the text broadcasts on that channel by the program index processing section 23; if the data group is page data, the decoding section 24 applies interpretative processing to the encoded text, graphic, sound, and other data according to the data type (including text, melody, photographic) identified by the data unit parameter. The interpreted page data is then converted by the display controller 25 to data (RGB data) for display on the display device.

Text broadcasts offering a variety of information services, including news and weather reports, are thus provided by transmitting data according to the transmission procedure thus described for interpretation of the encoded text and graphic information according to the transmission procedure by the text broadcast receiver for display of static image data on the television screen.

More recently, however, there have been proposals to further expand text broadcasting services while maintaining compatibility with existing text broadcast standards by expanding the transmission protocol (defining new transmission parameters); one such service makes it easier to set VCR recording reservations by encoding television program table information (including program titles and the date and time of the broadcast) and transmitting this data as the data unit data. Unfortunately, however, conventional text broadcast receivers are not compatible with such expanded transmission standards, and these users are therefore unable to utilize such new services.

At the same time, however, the typical procedure followed to set a VCR recording reservation is complicated and hard to understand, making it difficult for novices and many people unaccustomed to video and audio equipment to use the VCR timer recording functions. There is therefore a strong consumer desire for a simplified recording reservation operation.

SUMMARY OF THE INVENTION

Therefore, an object of the present invention is to provide a text broadcast receiver which meets this need, enables a VCR timer recording reservation operation using text broadcast television program table services, and enables a simple timer recording operation by maintaining compatibility with conventional VCR timer recording operations which do not utilize text broadcast services so that the user is not confused.

In order to achieve the above object, according to the present invention, there is provided a text broadcast receiver comprising data extraction means for extracting a data block in an encoded transmission-format text broadcast signal multiplexed to a vertical blanking period of a video signal, data group construction means for constructing a data group by assembling a plurality of extracted data blocks, first gate means for passing said data group when said data group contains a television program table, memory means for storing the television program table contained in said data group passed through said first gate means, and display control means for reading the television program table from said memory means and for displaying the television program table on a screen, characterized in that said display control means includes means for detecting the absence or presence of the television program table in the memory means for each designated channel, means for setting a first display mode (Fig. 3b) for displaying the television program table and various variable data to be set and for allowing television program reservation by selection of a program from the television program table when the presence of the television program table is detected, and means for setting a second display mode (Fig. 3a) for displaying an indication that the television program table is not available, and also for displaying said various variable data and for allowing said various variable data to be changed separately to allow television program reservation when the absence of the television program table is detected.

Further advantageous embodiments are defined in the sub-claims.

A text broadcast receiver according to the present

invention as thus described can identify television program table data, automatically determine the presence of a television program table in response to the timer recording commands entered by the user, and display on screen the result of this determination, thereby maintaining compatibility with conventional timer reservation operations which do not use text broadcast information, and enabling a simple timer recording operation without confusing the user.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become more fully understood from the detailed description given below and the accompanying diagrams wherein:

Fig. 1a is a block diagram of a text broadcast receiver according to a preferred embodiment of the present invention;
Fig. 1b is a diagrammatic view showing an arrangement of a memory used in the text broadcast receiver of Fig. 1a;
Fig. 1c is a diagrammatic view showing an arrangement of a remote control device used in the text broadcast receiver of Fig. 1a;
Fig. 2a is an schematic view showing a format of a text data;
Fig. 2b is a schematic view showing a manner in which a segment of the text data is carried in television signal;
Fig. 3a is a diagrammatic view of a television screen showing a timer recording reservation window without a television program table;
Fig. 3b is a diagrammatic view of a television screen showing a timer recording reservation window with a television program table,
Fig. 3c is a diagrammatic view similar to Fig. 3b, but particularly showing a pointer positioned to a program for the recording reservation, and
Fig. 4 is a block diagram of a conventional text broadcast receiver.

DESCRIPTION OF PREFERRED EMBODIMENTS

The preferred embodiment of the present invention is described hereinbelow with reference to the accompanying figures.

First, the television program table transmission procedure is described with reference to the text broadcast data transmission procedure diagram shown in Figs. 2a and 2b. At the television broadcasting station, the television program table data is formed in a format shown in Fig. 2a. The format of the television program table data is arranged in a data group which is compatible with that of the other conventional text broadcast data. The basic transmission procedure is therefore the same as in conventional text broadcasting as described hereinabove. Only those points which differ are described below.

As shown in Fig. 2a, the television program table data group is comprised of a data group header, data header, and data unit. Of these parameters, the data group header contains a data group identification code (hereinafter ID code) which indicates whether the data following the data group header is program management data, page data, program index data, or a new code used to indicate that the following data is a television program table.

Similarly, the data header contains a data header parameter which indicates whether the data unit following thereafter is program management data, page data, continued data, program index data, or a new code used to indicate that the following data unit is a television program table.

The data unit is the data set which is actually processed, and contains data unit parameters identifying the data type (e.g., text, melody, photographic). The encoded television program table data is accommodated in this data unit if the data group is for the television program table data.

Thus, the data group header, data header, and data unit parameters are extended to enable television program table data transmission while maintaining compatibility with conventional text broadcasts.

As shown in Fig. 2b, for broadcasting the data group, the data group is divided into a plurality of data blocks and each data block is multiplexed in one of the vertical blanking period. So, that by using a plurality of vertical blanking periods, one data group of the television program table data is broadcast.

Referring to Fig. 1a, the construction of the preferred embodiment of a text broadcast receiver according to the present invention is described.

The text broadcast receiver comprises a data extraction section 1 to extract the text broadcast (television program table) signal multiplexed to vertical blanking periods of the video signal and apply error correction, if any, to the extracted data block. A data group construction section 2 assembles the extracted data blocks together to construct the data group. A data identifier section 3 detects a data group identification code, data header parameter, and data unit parameter, to identify whether a data group, constructed by the data group construction section 2, is program index data, page data, or television program table data. A program index processing section 4 processes program index data to manage the program numbers of the text broadcast programs transmitted on that channel. A decoding section 5 processes the page header and interprets the text, melody, and photographic data according to the type thereof as identified by the data unit parameter.

According to the present invention, the text broadcast receiver further comprises a program table data memory 6 which stores television program table data when the received data group as identified by the data identifier section 3 is a television program table data. As

shown in Fig. Ib, memory 6 has an area for storing a first flag for indicating the completion of the recording of the past television program, an area for storing a second flag for indicating the reservation for recording a future television program, an area for storing the channel, an area for storing the date, an area for storing a start time, an area for storing an ending time, and an area for storing the title.

A recording reservation command section 7, such as a remote control device, produces a command signal specifying a recording reservation for a television program. As shown in Fig. Ic, an example of the recording reservation command section 7 arranged in a remote control device is shown, which includes a program call button 7a, a select button 7b, a data up button 7c, data down button 7d and a track ball 7e.

A program table data control section 8 controls address in the memory 6 where to store the newly obtained television program table data and, at the same time to erase the old television program table data.

A recording reservation setting section 9 searches, when the user enters a recording reservation by means of the recording reservation command section 7, the contents of the program table data memory 6 by means of the program table data control section 8, automatically sets the display data indicating whether the television program table is stored, and controls the recording reservation operation.

A display controller 10 converts the data from the decoding section 5 and recording reservation setting section 9 to display data (RGB data) on a screen (not shown).

The normal operation of a text broadcast receiver thus comprised according to the present invention is described hereinbelow.

The first step as carried out by the data extraction section 1 is extraction of the data block carrying the television program table data from the vertical blanking period of received television signal. Error correction is then applied and the data blocks are extracted. Then, by assembling the extracted data blocks, a data group is constructed in the data group construction section 2. The data identifier section 3 then determines, using the data group identification code in the data group header, the data header parameter in the data header, and the data unit parameters in the data unit, the type of the data group, e.g., program index data, page data, or television program table data. If the data group is program index data, the data group is sent to the program index processing section 4 in which the program number data management processing is applied for the text broadcasts on received channel. If the data group is page data, the data group is sent to the decoding section 5 which applies decoding processing to the encoded text, graphic, sound, and other data according to the data type (including text, melody, photographic) identified by the data unit parameter. The decoded page data is then converted by the display controller 10 to viewable data (RGB data) for display on the screen.

If the received data group as identified by the data identifier section 3 is television program table data, the data group is applied to the program table data memory 6 in which the television program table data is stored to as controlled by the program table data control section 8.

The operation when setting a VCR timer recording reservation is described next.

When the user depresses the program call button 7a, a window W1 shown in Fig. 3a or a window W2 shown in Fig. 3b appears on the screen. Fig. 3a shows a case in which the program table data memory 6 is carrying no television program table because, for example, the text broadcast television program table service is not provided on the corresponding channel, and Fig. 3b shows a case in which memory 6 is carrying the television program table.

First, the case shown in Fig. 3a is explained. In this case, "NO TV PRGRM TABLE" is indicated in the top of the window W1. By turning the track ball 7e, a pointer 11 is moved to one of a plurality of items, such as "CHANNEL", "DATE", "START TIME" and "END TIME". Then, the data up button 7c or data down button 7d is depressed to change the data to a required data. For example, for changing the data corresponding to "CHANNEL", pointer 11 is moved to "CHANNEL", and data up button 7c or data down button 7d is depressed to increase or decrease the number of channel indicated in the small window next to "CHANNEL". After all the data in the window W1 is set, the select button 7b is depressed so as to make one reservation of the television program. The data set for the reservation is stored in memory 6 with a second flag being turned on. After making one or more reservations, the pointer 11 is moved to "END SETTING" and the select button 7b is depressed to close the window W1.

Next, the case shown in Fig. 3b is explained. By turning the track ball 7e, pointer 11 is moved to "SELECT TV PRGRM" and select button 7b is depressed to enable the selection of the television programs from the television program table shown in the screen. By changing the channel number indication at a small window corresponding to "CHANNEL" in the above described manner, the television program table shown in the screen is varied for showing the program tables of different channels. By changing the date indication at a small window corresponding to "DATE", the television program table shown in the screen is varied to the designated date, if available. Similarly, by changing the indication at a small window corresponding to "START TIME", the table is scrolled up and down to show different hours. The above display control is effected in the recording reservation setting 9. When a desired television program is indicated in the table, pointer 11 is moved to point to the desired program, as shown in Fig. 3c. Then, select button 7b is depressed to set the second flag in the memory 6 at a place corresponding to a second where the desired tel-

evision program is stored. After making one or more reservations, the pointer 11 is moved to "END SETTING" and the select button 7b is depressed to close the window W2.

After one or more programs are reserved by setting the second flag, the data of the reserved programs are converted by the display controller 10 to screen display (RGB) data, and output to the screen for viewing for a short time for confirmation.

When a time corresponding to starting time of one of the reserved television program comes, the recording reservation setting section 9 produces a series of control signals to VCR 15 so as to switch on the VCR 15, select the channel as stored, and start the recording. Then, when a time corresponding to end time of that reserved television program comes, recording reservation setting section 9 produces a series of control signals to VCR 15 so as to stop the recording and to switch off the VCR 15.

The text broadcast receiver according to the preferred embodiment of the present invention determines by means of the data identifier section 3 whether the received data group is television program table data, and if it is, stores the television program table data to the program table data memory 6. When a timer reservation command is entered by the user, the contents of the program table data memory 6 are searched by means of the program table data control section 8 as commanded by the recording reservation setting section 9. It is automatically determined whether there is a television program table stored for the corresponding channel, and the result of this determination is displayed on screen. When the television program table is present, the timer reservation can be set by simply selecting the desired program from the television program table displayed on screen. It is therefore not necessary for the user to determine whether or not there is a television program table available. The same operation can be used to select the timer reservation setting mode regardless of whether or not the television program table is present, and the same simple operation can be used without confusing the user even when new services are provided.

A text broadcast receiver according to the present invention enables a simple timer recording reservation operation using text broadcast television program table services, maintains compatibility with conventional timer recording reservation operations which do not depend on text broadcast, and thus effectively enables a simple timer recording reservation operation even when the text broadcast television program table service is not available without confusing the user.

Claims

1. A text broadcast receiver comprising:

data extraction means (1) for extracting a data block in an encoded transmission-format text broadcast signal multiplexed to a vertical blanking period of a video signal;

data group construction means (2) for constructing a data group by assembling a plurality of extracted data blocks;

first gate means (3) for passing said data group when said data group contains a television program table;

memory means (6) for storing the television program table contained in said data group passed through said first gate means (3); and

display control means (7, 8, 9, 10) for reading the television program table from said memory means (6) and for displaying the television program table on a screen;

characterized in that

said display control means (7, 8, 9, 10) includes means for detecting the absence or presence of the television program table in the memory means (6) for each designated channel, means for setting a first display mode (Fig. 3b) for displaying the television program table and various variable data to be set and for allowing television program reservation by selection of a program from the television program table when the presence of the television program table is detected, and means for setting a second display mode (Fig. 3a) for displaying an indication that the television program table is not available, and also for displaying said various variable data and for allowing said various variable data to be changed separately to allow television program reservation when the absence of the television program table is detected.

2. A text broadcast receiver as claimed in Claim 1, further comprising select means (7) for selecting at least one television program in the displayed television program table, said selected television program being stored as a reserved television program for recording.

3. A text broadcast receiver as claimed in Claim 1 or 2, further comprising:

second gate means (3) for passing said data group when said data group contains a program index data; and

program index processing means (4) for processing said data group obtained from said second gate means (3) for managing the program numbers for text broadcast programs.

4. A text broadcast receiver as claimed in Claim 1,2 or 3, further comprising

third gate means (3) for passing said data group when said data group contains a page data; and
decoding means (5) for decoding said data group obtained from said third gate means (3) to either one of visual data for display on a screen or audio data for reproduction through a loudspeaker.

Patentansprüche

1. Text-Rundfunkempfänger, mit

einer Datenextraktionseinrichtung (1) zum Herausziehen eines Datenblockes in einem codierten Sendeformat-Text-Rundfunksignal, das auf eine vertikale Austastperiode eines Videosignals gemultiplext ist,
einer Datengruppenerzeugungseinrichtung (2) zum Aufbau einer Datengruppe durch Zusammenfügen von mehreren herausgezogenen Datenblöcken;
einem ersten Tormittel (3) zum Durchlassen der Datengruppe, wenn die Datengruppe eine Fernsehprogrammtabelle enthält,
einer Speichereinrichtung (6) zum Abspeichern der Fernsehprogrammtabelle, die in der Datengruppe enthalten ist, welche durch das erste Tormittel (3) durchgelassen wird; und
einer Anzeigesteuerungseinrichtung (7, 8, 9, 10) zum Auslesen der Fernsehprogrammtabelle aus der Speichereinrichtung (6) und zur Anzeige der Fernsehprogrammtabelle auf einem Bildschirm;

dadurch gekennzeichnet, daß
die Anzeigesteuerungseinrichtung (7, 8, 9, 10) Mittel zur Erkennung des nicht-Vorhandenseins oder Vorhandenseins der Fernsehprogrammtabelle in der Speichereinrichtung (6) für jeden benannten Kanal, Mittel zum Einstellen eines ersten Anzeige-Modus (Figur 3b) zum Anzeigen der Fernsehprogrammtabelle und von verschiedenen einzustellenden variablen Daten und zur Reservierbarkeit eines Fernsehprogramms durch Auswahl eines Programms aus der Fernsehprogrammtabelle, wenn das Vorhandensein der Fernsehprogrammtabelle erkannt ist, und Mittel zur Einstellung eines zweiten Anzeige-Modus (Figur 3a) zur Anzeige eines Hinweises darauf, daß die Fernsehprogrammtabelle nicht verfügbar ist, und ebenfalls zur Anzeige der verschiedenen variablen Daten und zur getrennten Veränderbarkeit der verschiedenen variablen Daten, um die Reservierung eines Fernsehprogramms zu ermöglichen, wenn das nicht-Vorhandensein der Fernsehprogrammtabelle erkannt ist, aufweist.

2. Text-Rundfunkempfänger nach Anspruch 1, ferner mit einer Auswahleinrichtung (7) zur Auswahl mindestens eines Fernsehprogramms in der angezeigten Fernsehprogrammtabelle, wobei das ausgewählte Fernsehprogramm als reserviertes Fernsehprogramm zur Aufzeichnung abgespeichert wird.

3. Text-Rundfunkempfänger nach Anspruch 1 oder 2, ferner mit

einem zweiten Tormittel (3) zum Durchlassen der Datengruppe, wenn diese Datengruppe ein Programmindex-Datenwort enthält, und
einer Programmindex-Verarbeitungseinrichtung (4) zur Verarbeitung der aus dem zweiten Tormittel (3) erhaltenen Datengruppe zur Verwaltung der Programmnummern für die Text-Rundfunkprogramme.

4. Text-Rundfunkempfänger nach Anspruch 1, 2 oder 3, ferner mit

einem dritten Tormittel (3) zum Durchlassen der Datengruppe, wenn diese Datengruppe ein Seiten-Datenwort enthält, und
einer Decodiereinrichtung (5) zum Decodieren der aus dem dritten Tormittel (3) erhaltenen Datengruppe in entweder visuelle Daten zur Anzeige auf einem Bildschirm oder Audio-Daten zur Wiedergabe durch einen Lautsprecher.

Revendications

1. Récepteur de radiodiffusion de texte comprenant :

un moyen d'extraction de données (1) pour extraire un bloc de données dans un signal de radiodiffusion de texte à format de transmission codé multiplexé pendant une période de retour de balayage vertical d'un signal vidéo ;
un moyen de construction de groupe de données (2) pour construire un groupe de données en assemblant une pluralité de blocs de données extraits ;
un premier moyen de porte (3) pour laisser passer ledit groupe de données lorsque ledit groupe de données contient une table de programmes de télévision ;
un moyen de mémoire (6) pour mémoriser la table de programmes de télévision contenue dans ledit groupe de données passé par ledit premier moyen de porte (3) ; et
un moyen de commande d'affichage (7, 8, 9, 10) pour lire la table de programmes de télévision à partir dudit moyen de mémoire (6) et pour afficher la table de programmes de télévision sur un écran ;

caractérisé en ce que

ledit moyen de commande d'affichage (7, 8, 9, 10) comprend un moyen pour détecter l'absence ou la présence de la table de programmes de télévision dans le moyen de mémoire (6) pour chaque canal désigné, un moyen pour établir un premier mode d'affichage (figure 3b) pour afficher la table de programmes de télévision et diverses données variables qui doivent être établies et pour permettre la réservation du programme de télévision par la sélection d'un programme à partir de la table de programmes de télévision lorsque la présence de la table de programmes de télévision est détectée, et un moyen pour établir un second mode d'affichage (figure 3a) pour afficher une indication que la table de programmes de télévision n'est pas présente et également pour afficher lesdites diverses données variables et pour permettre auxdites diverses données variables d'être modifiée séparément afin de permettre la réservation de programme de télévision lorsque l'absence d'une table de programmes de télévision est détectée.

2. Récepteur de radiodiffusion de texte selon la revendication 1, comprenant de plus un moyen de sélection (7) pour sélectionner au moins un programme de télévision dans ladite table de programmes de télévision affichée, ledit programme de télévision sélectionné étant mémorisé comme un programme de télévision réservé pour enregistrement.

3. Récepteur de radiodiffusion de texte selon la revendication 1 ou 2, comprenant de plus :

un second moyen de porte (3) pour laisser passer ledit groupe de données lorsque ledit groupe de données contient des données d'index de programme ; et
un moyen de traitement d'index de programme (4) pour traiter ledit groupe de données obtenu à partir dudit second moyen de porte (3) pour gérer les numéros de programme pour les programmes de radiodiffusion de texte.

4. Récepteur de radiodiffusion de texte selon la revendication 1, 2 ou 3 comprenant de plus :

un troisième moyen de porte (3) pour laisser passer ledit groupe de données lorsque ledit groupe de données contient des données de page ; et
un moyen de décodage (5) pour décoder ledit groupe de données obtenu à partir dudit troisième moyen de porte (3) soit comme données visuelles pour reproduction par l'intermédiaire de l'affichage sur un écran, soit comme données audio pour reproduction par l'intermédiaire d'un haut-parleur.

Fig. 1a

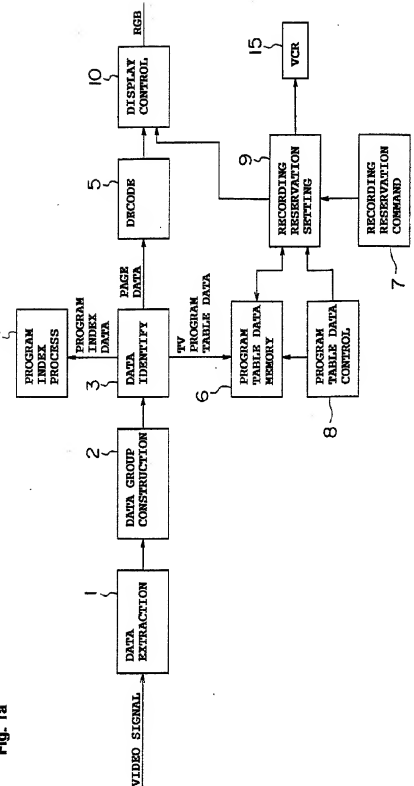

VIDEO SIGNAL
DATA EXTRACTION
1
DATA GROUP CONSTRUCTION
2
DATA IDENTIFY
3
PROGRAM INDEX PROCESS
4
PROGRAM INDEX DATA
PAGE DATA
TV PROGRAM TABLE DATA
6
PROGRAM TABLE DATA MEMORY
PROGRAM TABLE DATA CONTROL
8
DECODE
5
DISPLAY CONTROL
10
RGB
RECORDING RESERVATION SETTING
9
RECORDING RESERVATION COMMAND
7
VCR
15

Fig. 1b

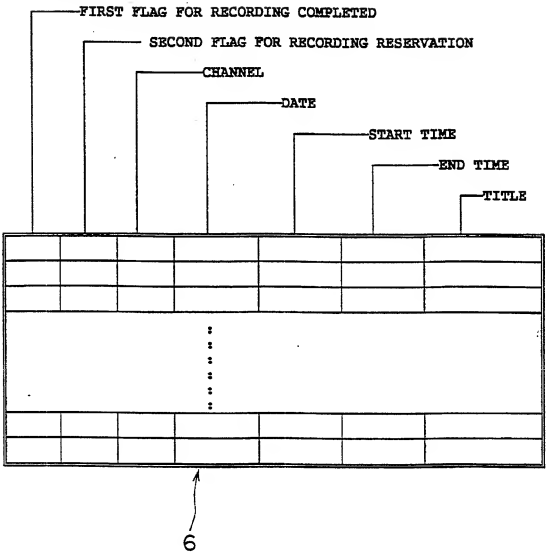

FIRST FLAG FOR RECORDING COMPLETED
SECOND FLAG FOR RECORDING RESERVATION
CHANNEL
DATE
START TIME
END TIME
TITLE
6

Fig. 1c

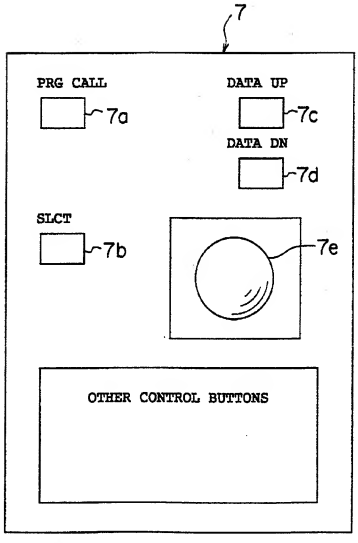

7
PRG CALL
7a
DATA UP
7c
DATA DN
7d
SLCT
7b
7e
OTHER CONTROL BUTTONS

Fig. 2a

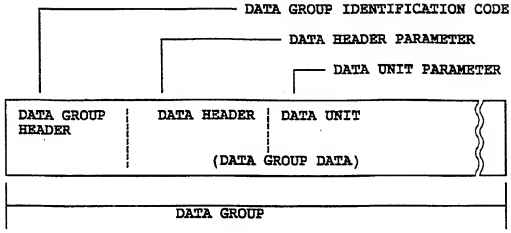

DATA GROUP IDENTIFICATION CODE
DATA HEADER PARAMETER
DATA UNIT PARAMETER
DATA GROUP HEADER
DATA HEADER
DATA UNIT
(DATA GROUP DATA)
DATA GROUP

Fig. 2b

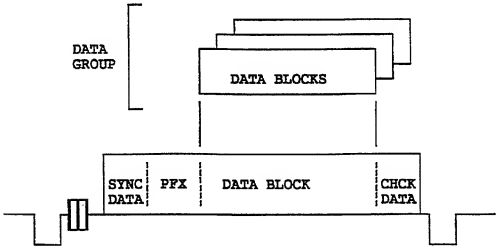

DATA GROUP
DATA BLOCKS
SYNC DATA
PFX
DATA BLOCK
CHCK DATA

Fig. 3a

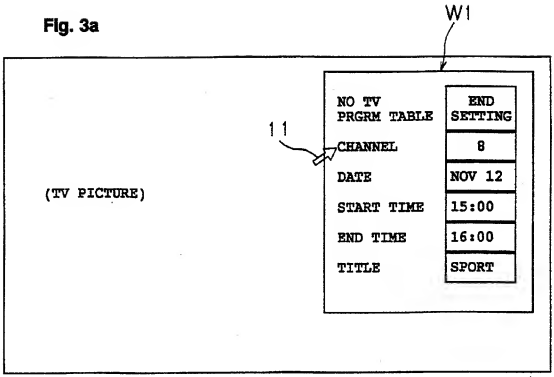

W1
11
(TV PICTURE)
NO TV PRGRM TABLE
END SETTING
CHANNEL
8
DATE
NOV 12
START TIME
15:00
END TIME
16:00
TITLE
SPORT

Fig. 3b

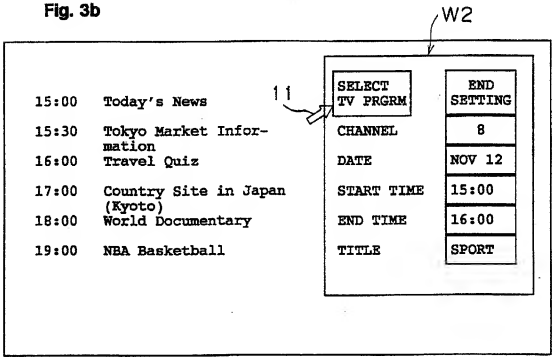
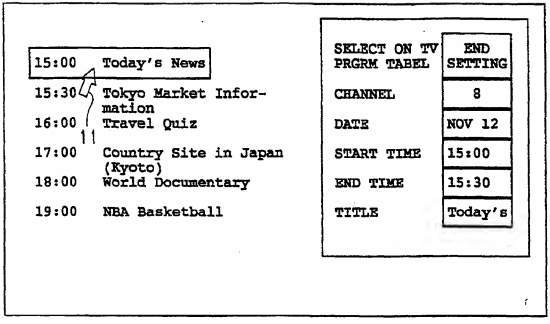

W2
11
15:00 Today's News
15:30 Tokyo Market Information
16:00 Travel Quiz
17:00 Country Site in Japan (Kyoto)
18:00 World Documentary
19:00 NBA Basketball
SELECT TV PRGRM
END SETTING
CHANNEL
8
DATE
NOV 12
START TIME
15:00
END TIME
16:00
TITLE
SPORT

Fig. 3c


15:00 Today's News
15:30 Tokyo Market Information
16:00 Travel Quiz
11
17:00 Country Site in Japan (Kyoto)
18:00 World Documentary
19:00 NBA Basketball
SELECT ON TV PRGRM TABEL
END SETTING
CHANNEL
8
DATE
NOV 12
START TIME
15:00
END TIME
15:30
TITLE
Today's

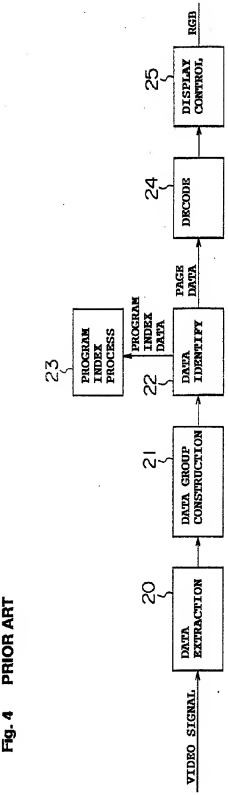



Fig. 4 PRIOR ART